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<input type="checkbox"/>	L9	(emulsion) same (adjuvant adj3 vaccine) same (fatty adj1 acid)	15
<input type="checkbox"/>	L8	(emulsion) same (adjuvant adj3 vaccine)	384
<input type="checkbox"/>	L7	(emulsion) same (adjuvant adj3 vaccine) same (monoglyceride)	0
<input type="checkbox"/>	L6	L5 and monoglyceride	25
<input type="checkbox"/>	L5	emulsion same (vaccine)	1646
<input type="checkbox"/>	L4	(emulsion) same (adjuvant or vaccine) same (monoglyceride)	33
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L4: Entry 13 of 33

File: USPT

May 22, 2001

DOCUMENT-IDENTIFIER: US 6235282 B1

**\*\* See image for Certificate of Correction \*\***

TITLE: Vaccinal fluid water-in-oil emulsions containing a metabolizable oil

Brief Summary Text (13):

We have surprisingly discovered that the use of polyglyceryl ricinoleate or of polyglyceryl polyricinoleate, alone or in combination with other surface-active agents such as monoglycerides, optionally hydrogenated polyoxyethylenated castor oils or else sorbitan esters, leads to fluid and very stable water-in-oil emulsions, both with, as oil, a triglyceride, which can be a vegetable oil or so-called medium-chain triglycerides (glyceryl tricaprylate/tricaprate), and propylene glycol esters (dioleate or else dicaprylate/dicaprate), or alternatively esters of oleyl or decyl oleate type. These water-in-oil emulsions have an adjuvant power. These formulae can validly be extended to natural hydrocarbons, for example squalene.

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L6: Entry 16 of 25

File: USPT

Jan 11, 2000

DOCUMENT-IDENTIFIER: US 6013255 A  
TITLE: Stable water-in-oil emulsions

Brief Summary Text (9):

International Patent Application WO 92/06599 describes the use of a water-in-oil emulsion for protecting vaccines. There is no mentioning of the use of a (protein) stabilizing (i.e. a water activity lowering) agent as part of the emulsion. The formulation of labile compounds such as enzymes in such an emulsion would give rise to a rapid loss of enzymes activity. This loss may amount to 50% per month in hot climates which is unacceptable for commercial products. This patent application also describes the preferred application of a lecithin-based emulsifier.

Brief Summary Text (18):

A preferred composition comprises a water-in-oil emulsion containing a labile compound of interest in the water phase together with a polyol, and wherein the emulsion is stabilized using an emulsifier which is active at high concentrations of the polyol. The emulsifier which is used preferably is a distilled monoglyceride or polyglycerol polyricineolate.

Brief Summary Text (38):

Useful emulsifiers are monoglycerides (such as Hymono.TM. 1163 and Hymono.TM. 7804) and polyglycerol polyricinoleate (Admul.TM. WOL 1403). Due to the efficacy of the selected emulsifiers in the presence of relatively high amounts of polyols, coalescence of individual water droplets present in the oil phase is low. In this way, the emulsion according to the invention adequately prevents the migration of non-oil soluble compounds between individual water droplets in the emulsion.

Detailed Description Text (13):

1d. Emulsions prepared with monoglyceride emulsifiers

Detailed Description Text (15):

Under gentle stirring 24 g of Hymono.TM. (a monoglyceride; E471) is dissolved in 700 g of fish oil at a temperature of 70.degree. C. (Hymono.TM. 1163) or 50.degree. C. (Hymono.TM. 7804). Subsequently, the solution is cooled down till at least 50.degree. C. Using a high speed homogenator (Ultra Turrax), 200 g of enzyme solution is dispersed in the emulsifier-containing oil phase and the emulsion is cooled down to room temperature. After a period of a few days, the water phase showed very limited sedimentation only. This sedimentation could be minimised by addition of palmitic acid.

## CLAIMS:

3. The emulsion of claim 1 wherein the emulsifier is a monoglyceride or is a polyglycerol polyricinoleate.

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File: USPT

Nov 18, 1997

DOCUMENT-IDENTIFIER: US 5688761 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Convertible microemulsion formulations

Abstract Text (1):

There is provided a water-in-oil (w/o) micro emulsion which readily converts to an oil-in-water (o/w) emulsion by the addition of aqueous fluid to the w/o microemulsion, whereby an water-soluble biologically-active material in the aqueous phase is released for absorption by the body. The w/o microemulsion contains a preferred high purity short chain monoglyceride surfactant. The w/o microemulsion is particularly useful for storing proteins and the like for long periods of time at room temperature and above until they are ready for use, at which time the addition of aqueous fluid converts the microemulsion to an o/w emulsion and release the protein.

Brief Summary Text (12):

Microemulsion systems for use as injection compositions are set forth in GB 1,171,125. The compositions disclosed are not directed towards increased uptake of a biologically active material and the use of monoglycerides as surfactants is not shown.

Brief Summary Text (13):

Emulsion systems have also been used as vaccine adjuvant systems, particularly water-in-oil emulsions. The strength of the immune response and the speed with which it is evoked can be modified by the nature of the liquid matrix of the vaccine. One widely-used example of such a system is Freund's adjuvant, which consists of paraffin oil and a surfactant, mannide mono-oleate. These adjuvant emulsions, due to their thermodynamic instability, must be emulsified with a solution containing the immunogen just prior to injection of the vaccine. In addition, the paraffin oil in the adjuvant can lead to inflammation of the injection site and formation of granulomas. These two effects are greatly enhanced if immune stimulators are also employed. The oil and immune stimulators are helpful, however, in that they stimulate immune response by enhancing the activity of macrophages. These macrophages engulf the emulsion droplets and process the immunogen at the site of the injection. It would, therefore, be beneficial to be able to produce a vaccine adjuvant system which has a prolonged stability and thus, a prolonged shelf life in its prepared microemulsion state, and which can be formulated with a biodegradable oil which would not stimulate granuloma production.

Brief Summary Text (19):

One embodiment of the present invention is directed towards stable, water-in-oil microemulsion compositions that contain (i) an oil phase that has at least one pharmaceutically acceptable oil; (ii) an aqueous phase that contains water; (iii) a biologically active material; (iv) a surfactant mixture having a combined HLB value of from about 7 to about 14. The surfactant mixture is made up of at least one surfactant having an HLB value below about 8, the low HLB surfactant, wherein the low HLB surfactant component has at least 80% by weight, preferably at least 90% by weight, and more preferably at least 95% by weight of a C.sub.9, C.sub.10, C.sub.11, C.sub.12, or C.sub.13 monoglyceride or mixtures thereof. The surfactant

mixture is also made up of at least one surfactant having an HLB value above about 8 which surfactant is referred to as the high HLB surfactant. The low and high HLB surfactant can be a mixture of different surfactants. Preferred low HLB surfactants include C.sub.9, C.sub.11, C.sub.13 monoglycerides or mixtures thereof, more preferably C.sub.11 or C.sub.13 monoglycerides or mixtures thereof.

Brief Summary Text (24):

A particular embodiment of the present invention is the use of a w/o microemulsion as a vaccine adjuvant system. The immunogen is carried in the aqueous phase of the microemulsion adjuvant system, which when introduced into the body and contacted with aqueous body fluids, undergoes conversion to form an oil-in-water emulsion.

Detailed Description Text (2):

The production and use of water-in-oil (w/o) microemulsion compositions containing water-soluble biologically active materials has been described in copending application Ser. No. 885,202, filed May 20, 1992, which is incorporated in its entirety, assigned to the assignee of the present application. It has now been surprising found that the use of high purity C.sub.9-13 monoglycerides as the low HLB (hydrophilic-lipophilic balance) surfactant enhances the uptake of the active material upon administration.

Detailed Description Text (3):

The water-in-oil microemulsion compositions of this invention which are capable of converting, upon addition of aqueous fluid, to an oil-in-water emulsion are produced by combining (1) an oil phase which contains at least one pharmaceutically acceptable oil; (2) an aqueous phase which contains water; (3) at least one biologically active material; (4) a mixture of surfactants having a combined HLB value of generally from about 7 to about 14, the surfactant mixture containing (i) at least one surfactant having an HLB value below about 8, referred to as the low HLB surfactant, and (ii) at least one surfactant having an HLB value above about 8, referred to as the high HLB surfactant. The low HLB surfactant includes at least 80 percent by weight, preferably at least about 90 percent by weight, and more preferably at least about 95 percent by weight, of a C.sub.9, C.sub.10, C.sub.11, C.sub.12, or C.sub.13 monoglyceride or mixtures thereof. These monoglycerides have fatty acid moieties of from 6 to 10 carbon atoms bonded onto the 3 carbon glyceride backbone, thus they can also be referred to as C.sub.6-10 fatty acid monoglycerides.

Detailed Description Text (16):

The surfactant, or more preferably, the mixture of surfactants, should be chosen from those having a resulting HLB value in the range of from about 7 to 14, more preferably 8 to 13. When a mixture of surfactants is employed, while some of the components may have a value outside the desired range, e.g., below about 5, it will be understood that by mixing in surfactants with HLB's greater than, e.g., about 9, the resulting combined HLB value will be in the range of 7 to 14. Although some protein and peptide delivery system compositions require the presence of certain surfactants, such as sterols and lecithin, the present w/o microemulsion compositions do not require the presence of such surfactants or mixtures thereof. The present invention, however, can be formulated with such surfactants, either in combination or alone. Beyond the requirement for the monoglyceride in the low HLB surfactant part of the w/o microemulsions, the microemulsion can be essentially free, that is containing less than about 0.05% wt. in the w/o microemulsion of any of the listed surfactants.

Detailed Description Text (21):

More specifically, preferred low HLB surfactants include C.sub.9 to C.sub.13 monoglycerides, C.sub.19 to C.sub.25 diglycerides of mono and poly unsaturated fatty acids, C.sub.15 to C.sub.23 diglycerides, and C.sub.35 to C.sub.47 diglycerides of mono and poly unsaturated fatty acids; preferred high HLB surfactants include ethoxylated castor oil, and the sorbitan surfactants. Short

chain monohydroxyl alcohols, such as C.sub.1 to C.sub.6 are preferably not employed as surfactants in these systems due to toxicity factors.

Detailed Description Text (22):

The low HLB surfactant system employed in the w/o microemulsions of the present invention contains at least about 80 percent by weight, preferably at least about 90 percent by weight, and more preferably at least about 95 percent by weight, of a C.sub.9, C.sub.10, C.sub.11, C.sub.12, or C.sub.13 monoglyceride or mixtures thereof, preferably a C.sub.9, C.sub.11, or C.sub.13 monoglyceride or mixtures thereof, and more preferably a C.sub.11 or C.sub.13 monoglyceride or mixtures thereof. Commercial examples of these surfactants include Imwitor 308, manufactured by Muls America, Inc., having about 80-90% wt. C.sub.11 monoglycerides; and Glycerol Monocaprylin, manufactured by Sigma Chemicals as 1-monooctanoyl-rac-glycerol having about 99% wt. C.sub.11 monoglycerides, and Glycerol Monocaprate, manufactured as 1-monodecanoyl-rac-glycerol by Sigma Chemicals, having about 99% wt. C.sub.13 monoglycerides. The low HLB Surfactant system can either be a combination of the preferred high purity C.sub.9-13 monoglyceride surfactant with other low HLB surfactants, or the low HLB surfactant system can be comprised solely of the preferred high purity C.sub.9-13 monoglyceride surfactant or mixtures thereof.

Detailed Description Text (54):

The microemulsion vaccine adjuvant system of the present invention is characterized by its stability and long shelf life, in comparison to emulsion adjuvant systems of the prior art. The use of the oils of the present invention, which are referred to as biodegradable oils, to formulate the microemulsion system provides benefits over previous emulsion adjuvant systems in that the production of granulomas is believed to be decreased. The w/o microemulsion adjuvants can readily convert to oil-in-water emulsions when administered into the body which allows for the generation of macrophage stimulating oil droplets in situ. The smaller and more uniform size of the resulting droplets also is expected to lead to a more reproducible response to a given immunogen.

Detailed Description Paragraph Table (1):

TABLE 1										Compo- Captex Captex Imwitor										
Glycerol Tween sition 200 800 308 Monocaprate 80 Aqueous																				
										A	59.4	15.3	15.3	10	B	59.8	15.4	15.4	9.4	C
50	36	8	6							Captex 200 Propylene glycol										
dicaprylate/caprate having a fatty acid composition of caproic (4.1), caprylic (68.29), capric (27.4%), lauric and higher (0.2), manufactured by Karlshamns Lipid Specialties USA. Captex 800 Propylene glycol dioctanoate, manufactured by Karlshamns Lipi Specialties USA. Imwitor 308 Glycerol caprylate (80-90% C.sub.11 <u>monoglyceride</u> ), manufactured by Huls America, Inc. Glycerol Monocaprate 1monodecanoyl-rac-glycerol (99% C.sub.13 <u>monoglyceride</u> ), manufactured by Sigma Chemical. Tween 80 polyoxyethylene sorbitan mono oleate, HLB = 15, manufactured by Sigma Chemical.																				

Other Reference Publication (2):

Engstrom, L, "Aggregation and Structural Changes in the L2-Phase in the System Water/Soybean Oil/Sunflower Oil Monoglycerides", J. Dispersion Science and Technology 1990, 11(5), 479-489.

Other Reference Publication (9):

Gulik-Krzywicki, T. and Larsson, "An Electron Microscopy Study of the L2-Phase (Microemulsion) in a Ternary System: Triglyceride/Monoglyceride/Water", Chemistry and Physics of Lipids 1984, 35, 127-132.

CLAIMS:

1. A stable, water-in-oil microemulsion composition suitable for storage and

administration of biologically active materials, comprising:

(a) from about 5 to about 99 volume percent of an oil phase comprising at least one pharmaceutically acceptable oil;

(b) up to about 60 volume percent of an aqueous phase comprising water;

(c) a biologically active material having a water:oil partition coefficient greater than 10:1;

(d) from about 1 to about 70 volume percent of a mixture of surfactants having a combined HLB value of from about 7 to about 14 comprising

(i) a low HLB surfactant having an HLB below 8, said low HLB surfactant being at least 80 percent by weight of a C.sub.9 monoglyceride, C.sub.10 monoglyceride, C.sub.11 monoglyceride, C.sub.12 monoglyceride, or C.sub.13 monoglyceride, and

(ii) at least one surfactant having an HLB value above about 8.

3. The water-in-oil microemulsion composition of claim 2 wherein said water-in-oil microemulsion composition contains a low HLB surfactant component that is at least 80 percent by weight of a surfactant selected from the group consisting of C.sub.9 monoglycerides, C.sub.10 monoglycerides, C.sub.11 monoglycerides, C.sub.12 monoglycerides, C.sub.13 monoglycerides, or mixtures thereof.

4. The water-in-oil microemulsion composition of claim 3 wherein said low HLB surfactant component is at least 90 percent by weight of said monoglycerides.

5. The water-in-oil microemulsion composition of claim 3 wherein said low HLB surfactant component is at least 95 percent by weight of said monoglycerides.

7. The water-in-oil microemulsion composition of claim 3 wherein said low HLB surfactant component contains at least 80 percent by weight of a C.sub.11 monoglyceride.

11. A stable, water-in-oil microemulsion composition suitable for storage and administration of biologically active materials, comprising:

(a) from about 5 to about 99 volume percent of an oil phase comprising at least one pharmaceutically acceptable oil;

(b) up to about 60 volume percent of an aqueous phase comprising water;

(c) a biologically active material that is a therapeutic and is a protein or peptide and has a water:oil partition coefficient greater than 10:1;

(d) from about 1 to about 70 volume percent of a mixture of surfactants having a combined HLB value of greater than about 7, comprising

(i) a low HLB surfactant having an HLB below 8, said low HLB surfactant being at least 80 percent by weight of a C.sub.9 monoglyceride, C.sub.10 monoglyceride, C.sub.11 monoglyceride, C.sub.12 monoglyceride, or C.sub.13 monoglyceride, and

(ii) at least one surfactant having an HLB value above about 8, and

(e) a modifier, present in an amount sufficient to cause the water-in-oil microemulsion to convert to an oil-in-water microemulsion upon the addition of aqueous fluid.

13. The water-in-oil microemulsion composition of claim 2 wherein said water-in-oil

microemulsion composition contains a low HLB surfactant component that is at least 80 percent by weight of a surfactant selected from the group consisting of C.sub.9 monoglycerides, C.sub.10 monoglycerides, C.sub.11 monoglycerides, C.sub.12 monoglycerides, C.sub.13 monoglycerides, or mixtures thereof.

16. A method of administering to animals a water-in-oil microemulsion composition, comprising:

- (a) providing a water-in-oil microemulsion comprising
  - (1) from about 5 to about 99 volume percent of an oil phase comprising at least one pharmaceutically acceptable oil;
  - (2) up to about 60 volume percent of an aqueous phase comprising water;
  - (3) a biologically active material that is therapeutic and has a water:oil partition coefficient greater than 10:1;
  - (4) from about 1 to about 70 volume percent of a mixture of surfactants having a combined HLB value of from about 7 to about 14 comprising
    - (i) a low HLB surfactant having an HLB below 8, said low HLB surfactant being at least 80 percent by weight of a C.sub.9 monoglyceride, C.sub.10 monoglyceride, C.sub.11 monoglyceride, C.sub.12 monoglyceride, or C.sub.13 monoglyceride, and
    - (ii) at least one surfactant having an HLB value above about 8;
- (b) administering an effective amount of the water-in-oil microemulsion to the body of an animal, wherein the administration is parenterally, enterally, or via any other mucous membrane; and
- (c) achieving a therapeutically elective increase in the blood system of said animal of said biologically-active material.

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File: USPT

Jul 2, 1996

DOCUMENT-IDENTIFIER: US 5531925 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Particles, method of preparing said particles and uses thereof

Brief Summary Text (23):

In the context of this invention, two examples of lipid-water based systems have been investigated with the objective of mapping the underlying phase behavior so as to understand and develop the techniques disclosed herein regarding the fragmentation process: Commercially available products have been used throughout this study, and it is important to note that these are generally not single-component products. We first discuss the binary phase diagram of the glycerol monooleate (GMO)-water system. The GMO has been obtained through molecular distillation of pine-needle oil (Grinsted, Denmark), and has a monoglyceride content of >98%, of which 92.3% is monoolein (MO) (MO refers to the pure monoolein, while GMO refers to a monoolein rich monoglyceride blend). Many phase diagrams have been reported involving cubic phases of monoglycerides (Lutton (1965), Larsson et al. 1978, Krog and Larsson 1983, Larsson 1989, Krog 1990). In addition to the pure lipids monoolein, monoelaidin, monolinolein, monoarachidin, and monolinolein (Lutton 1965, Larsson et al. 1978, Hyde et al. 1984, Caffrey 1989), several blend qualities of monoacylglycerides are well characterized and known to form cubic phases in equilibrium with water (Larsson and Krog 1983, Krog 1990). Significantly, these blends are available at low production costs, typically less than \$2 per pound.

Brief Summary Text (24):

Monoacylglycerides are often used in cosmetic products (Cosmetic Ingredient Review expert panel 1986), food industry (Krogh 1990) and pharmaceuticals (Martindale the extra pharmacopoeia 1982), and are generally recognized as safe (GRAS) substances and as indirect food additives for human consumption without restrictions as to their concentrations. Federal regulations allow the use of monoglycerides, blends thereof, and blends of mono- and diglycerides as prior-sanctioned food ingredients and as both indirect and direct food additives. Furthermore, the metabolic fate of monoglycerides (and glycerides in general) is well documented in the human body. In the cosmetic industry monoglycerides and blends thereof, especially monoolein, are used as emulsifiers and thickening agents and recognized as safe cosmetic ingredients at concentrations up to 5% (Cosmetic Ingredient Review expert panel 1986).

Brief Summary Text (25):

The fact that there exists cubic phases in equilibrium with excess of water in the above mentioned monoglyceride systems is a strong indication that the cubic phase is of the reversed, type II topology. This has been verified by self-diffusion NMR (Lindblom et al. 1979). It should be pointed out that several systems which form cubic phases of the reversed type exhibit cubic mesomorphism, i.e. the appearance of a sequence of distinguishable cubic phases with different physical appearance, as well as exhibiting different lattice characteristics. The phase behavior of the present GMO-water system was; found to be very similar to that of MO-water reported by Hyde et al. (1984) (Engstrom and Engstrom 1992). The Q.sup.224 was found to be the cubic phase which coexists with excess of water.

Brief Summary Text (52):

MO may be considered as a fusogenic lipid and can generally not be regarded as blood compatible, at least not as a monomer or as assembled in the cubic phase. However, the particles claimed are blood compatible (with the exception of the dispersion with a crystalline outer palisade, discussed below) as indicated by the lack of lysis products after incubation with red blood cells for 1 hr. This may be attributed to the very hydrophilic palisade layer constituted by the surface phase, surrounding the particles. The surface phase can conveniently be chosen to be composed of polyethylenoxide units or glyco- moieties, or a mixture of these. In these cases, the palisade to some extent mimics the glycocalyx of blood cells. The chemical constituents of the cubic phase can further be varied by exchanging the monoglycerides by phospholipids such as soybean lecithin, egg yolk lecithin, pure phospholipids as dioleoylphosphatidylcholine, and diglycerides. By such means, the molecular constituents of the bilayer structure can be systematically varied so as to achieve the desired properties as described in detail below.

Detailed Description Text (4):

d) Co-equilibrate the starting material, at elevated temperature, with an amphiphilic substance that forms a cubic or intermediate phase at the equilibration temperature and one of the following structures at the temperature desired for the formulation (typically 37.degree. C., physiologic temperature): 1) a lamellar structure; 2) a lamellar crystalline structure; 3) an L3 phase. The fragmentation procedure is brought about through rapid cooling of the system in which one of the structures 1-3 is formed at well-defined crystallographic planes in the cubic phase or at defects in the cubic phase. Examples of substances which can be potentially used for the introduction of particular surface phases include: class 1) phosphatidylcholines such as phosphatidylethanolamine and ester derivatives thereof, phosphatidylinositol, phosphatidylglycerol, cationic surfactants, such as didodecyltrimethyl ammonium bromide (DDAB), monoglycerides, all of which form lamellar phases in equilibrium with the interior phase and with excess of solution; class 2) monoglycerides forming a lamellar crystalline phase in equilibrium with the cubic and excess solution phase; class 3) In addition to those given in procedure a) above phosphatidylglycerols and phosphatidylethanolamine, both with chain lengths of 18 carbons or above and unsaturated, can be mentioned. Repeated freeze-thawing cycles can be used to control particle size distribution, and the dispersion obtained can be aftertreated as described below.

Detailed Description Text (7):

Materials: A GMO prepared by molecular distillation was purchased from Grindsted Products A/S, glycerol monooleate (GMO) (85-06) (074832-FF 8-009), (Braband, Denmark), and consisted of 98.8% monoglycerides, 1.0% glycerol, 1.0% diglycerides and 1.0% free fatty acids. The fatty acid composition was C16:0:0.5, C18:0:2.0, C18:1:92.3, C18:2:4.3, C18:3:trace, C20:4:0.5 wt. %, as stated by the supplier. Purified poloxamer 407, also name, Pluronic F-127, was obtained from BASF Corporation (Wyan-dotte, USA). Soybean phosphatidylcholine (SPC) was purchased from Lucas Meyr (Epikuron 200) with a fatty acid pattern according to Rydhag (1979) of: C8:0.8, C12:2:12.2. C16:1:0.4, C18:2.7, C18:1:10.7, C18:2:67.2 and C18:3:6.0. Double distilled water was used in all experiments.

Detailed Description Text (31):

These particles have been obtained through lyotropic phase transformation of the cubic phase dispersions described above. That is, the procedure is substantially the same, but the intention is that due to the existence of an L3 phase in equilibrium with diluted solution (knowledge of which is obtained through prior phase diagram studies), the particle interior will be an L3 phase rather than a cubic phase. Systems where an L3 phase is known to appear in equilibrium with diluted solution are ternary systems containing amphiphilic proteins, such as the casein/monoglyceride/water system, and the poloxamer 407/ monoglyceride/water and poloxamer 188/ monoglyceride/water systems. The addition of lecithin, such as SPC, egg yolk lecithin, or lamellar forming cationic surfactants such as DDAB according

to the above procedures may favor the formation of these particles over the cubic phase particles, as may the increase in the concentration of the third, amphiphilic component. Thus, the production procedures are similar to those described for fragmentation of cubic phases with The exception of procedure c) in section 3.1. The L3 phase particles are composed of bicontinuous L3 phase interiors stabilized by the action of the palisades created as described in a) and b) in section 3.1.

Detailed Description Text (78):

A problem with the use of homogeneous reversed cubic phases as drug delivery system is its well documented fusogenic property and as an effect it is hemolytic. The documentation is particularly well regarding monoolein (see e.g. Cramp and Lucy, Hope and Cullis 1981 and references cited therein). On the other hand there are reports regarding antitumor activity of certain monoglycerides (Karo et al. 1969) as well as antimicrobial effects (see e.g. Yamaguchi 1977). The current particles, prepared by the methods given in section 3.1. and 3.1.1. do not show any fusogenic activity even when the phase constituting the interior is originating from the GMO/water cubic phase, as was indicated by the absence of hemolytic products in mixtures of a cubic phase dispersion and human whole blood. The apparent absence of toxic effect in the animal test discussed herein also supports this conclusion, although clearly more testing is necessary. This apparent lack of toxicity is almost certainly due to the increased hydrophilicity of this cubic phase dispersion as compared to the homogeneous cubic phase, and through steric stabilization, both provided by the hydrophilic palisade created by the surface phase.

Detailed Description Text (89):

For some peptidic compounds precautions have to be taken to avoid precipitation, fibrillation, and/or aggregation of the compound. In the current invention such changes are most conveniently avoided by adding the peptidic compound as a solution to a preequilibrated cubic phase with the smallest possible amount of water within the cubic phase region so as to swell the cubic phase to the cubic phase considered for the final equilibration and subsequent fragmentation, or by adding the peptidic solution to a preequilibrated mixture of lamellar and cubic phase, i.e. to a two-phase region consistent with the coexistence at equilibrium conditions of lamellar phase and cubic phase in accordance with phase behavior, followed by equilibration and subsequent fragmentation. The latter is exemplified in the GMO (or MO or mixtures of monoglycerides or mixtures of certain monoglycerides and phospholipids or lecithin)/water system.

Detailed Description Text (131):

The present invention will also find cosmetic applications. Indeed examples of the molecular constituents of the particles such as monoglycerides and poloxamers are frequently encountered in cosmetic preparations.

Detailed Description Text (133):

5. References Allison, A.C. and Byars, N.E. (1986) J. Immunol. Methods, 95, 157. Allison, A.C. and Byars, N.E. (1990) in New generation vaccines (Woodrow, G.C. and Levine, M.M. eds.) pp. 129-140, Marcel Dekker, N.Y. Allison, A.C. and Gregoriadis, G. (1974) Nature, 252, 252. Alving, C.R. (1987) in Liposomes from biophysics to therapeutics (Ostro, M.J. ed.) pp. 195-218, Marcel Dekker, N.Y. Anderson, D.M. (1987) U.S. patent application Ser. No. 07/052,713; EPO Appl. 88304625.2; Japanese Appl. 63-122193; U.S. patent application Ser. No. 07/500,213 (1990). Anderson, D., Wennerstrom, H. and Olsson, U. (1989) J. Phys. Chem. 93,4243. Banga, A.K. and Chien, Y.W. (1988) Int. J. Pharmac. 48, 15. Barla, P., Larsson, K., Ljusberg-Wahren, Norin, T. and Roberts, K (1979) J. Sci. Food. Agric. 30, 864. BASF (1989) "Performance chemicals FDA and EPA status information bulletin", Parsippany, USA. Benton, W.J. and Miller, C.A. (1983) J. Chem. Phys. 73, 4981. Bergenstahl, B. and Fontell, K. (1983) Prog. Colloid Polym. Sci. 68, 48. Brandenburg, K., Koch, M.H.J. and Seydel, U. (1990) J. Str. Biol. 105, 11. Burrows, R., Artwood, D. and Collett, J.H. (1990) J. Pharm. Pharmacol. 42, suppl. Science proceeding 127th meeting of the British Pharmaceutical conference 1990, Abstract 3P. Byars, N.E. and Allison, A.C.

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G.G. and Pierson, H.F. (1988) in Liposomes as drug carriers. Recent trends and progress (Gregoriadis, G. ed.), pp. 461-472, John Wiley, N.Y. Milner, S.T., Cares, M.E. and Roux, D. (1990) J. Phys France 51, 2269. Morein, B. (1988) Nature 332, 287. Morre, D.J. (1989) in The pathobiology of neoplasia (Sirica, A.E. ed.) pp. 323-344, Plenum Press, N.Y. Mueller-Goymann, C.C. (1985) Pharmazeutische Z. 130, 682. Mueller-Goymann, C.C. (1987) Acta Phar. Technol. 33, 126 Mueller-Goymann, C. (1989) Acta Pharm. Nord. 1, 238. Mulley, B.A. (1974) in Emulsions and emulsion technology (K.J. Lissant, ed.) pp. 291, Marcel Dekker, N.Y. Peptide pharmaceuticals: approaches to the design of novel drugs (1991) (Ward, D.J. ed.) Elsevier, N.Y. Pharmaceutical dosage forms; disperse systems (1988) Liebermann, A., Rieger, M.M. and Banker, S. eds.) Vol. 1 and 2, Marcel Dekker, N.Y. Porte, G., Marignan, J., Bassereau, P. and May, R.. (1988) J. Phys. France 49, 511. Rosvear, F.B. (1968) J. Soc. Cosmetic Chemists 19, 581. Rydhag, L. (1979) Fette, Seifde, Anstrichtmittel 81, 168. Sharon, N. and Lis, H. (1989) "Lectins" Chapman Hall, London. Seddon, J. (1989) Biochim. Biophys. Acta, 1031, 1. Small, D.M. (1986) "The physical chemistry of lipids" pp. 89-96, Plenum Press, N.Y. Speiser, P. (1984) in Reverse micelles.

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L6: Entry 24 of 25

File: USPT

Jan 28, 1992

DOCUMENT-IDENTIFIER: US 5084269 A

TITLE: Adjuvant for dose treatment with antigens

Brief Summary Text (4):

In the past there have been many adjuvants used, see for example Reynolds et al., "Adjuvant Activity of a Novel Metabolizable Lipid Emulsion with Inactivated Viral Vaccines," Infection and Immunity, June 1980 pp. 397-943, which discusses such adjuvants as glycerine, glycerine in combination with lecithin, Freund adjuvant, and others.

Brief Summary Paragraph Table (2):

MAJOR PHOSPHOLIPIDS Phosphatidylcholine 23% Phosphatidylethanolamine 20% Phosphatidylinositol 14% Phosphatidic Acid 5-8% MINOR PHOSPHOLIPIDS Phosphatidylserine 2% Others\* 7-8% 71-75% \*Includes: Acylphosphatidylethanolamine Diphosphatidylethanolamine Lysophosphatidylethanolamine Lysophosphatidylcholine Unidentified Phospholipids GLYCOLIPIDS Esterified Steryl Glucosides 6% Steryl Glucosides and Cerebrosides 3-4% Digalactosyl Diglycerides 1.5-2% Unidentified Glycolipids 3-4% 13-16% NEUTRAL LIPIDS Triglycerides 2-3% Free Fatty Acids 0-1% Campesterol, Stigmasterol and 0.1-0.2% B-Sitosterol Others\*\* 0.2% 2.3-4.2% \*\*Includes: Diglycerides Monoglycerides Sterol Esters Pigments Tocopherols Others SUGARS Sucrose 3.5% Raffinose 0.5% Stachyose 4.0% 8.0% MOISTURE 0.5-1.0% In summary, the AI composition is basically: Major Phospholipids 60% Minor Phospholipids 10% Glycolipids 22% Sugars 8%

Other Reference Publication (4):

Burgh et al., "Comparison of Inactivated Newcastle Disease Viral Vaccines Containing Different Emulsion Adjuvants", Am. J. Vet. Res., vol. 44, No. 1, pp. 72-75, (1983).

Other Reference Publication (5):

Braugh et al., "Comparison of Inactivated Newcastle Disease Viral Vaccines Containing Different Emulsion Adjuvants", Am. J. Vet. Res., 44:72-75, Jan. 1983.

Other Reference Publication (6):

Reynolds et al., "Adjuvant Activity of a Novel Metabolizable Lipid Emulsion with Inactivated Viral Vaccines", Infect. Immun., 28:937-943, Jun. 1980.

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Search Results - Record(s) 1 through 25 of 25 returned.

☐ 1. Document ID: US 6720001 B2

Using default format because multiple data bases are involved.

L6: Entry 1 of 25

File: USPT

Apr 13, 2004

US-PAT-NO: 6720001

DOCUMENT-IDENTIFIER: US 6720001 B2

TITLE: Emulsion compositions for polyfunctional active ingredients

DATE-ISSUED: April 13, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Chen; Feng-Jing	Salt Lake City	UT		
Patel; Mahesh V.	Salt Lake City	UT		

US-CL-CURRENT: [424/455](#), [424/400](#), [424/450](#), [424/456](#)

<a href="#">Full</a>	<a href="#">Title</a>	<a href="#">Citation</a>	<a href="#">Front</a>	<a href="#">Review</a>	<a href="#">Classification</a>	<a href="#">Date</a>	<a href="#">Reference</a>	<a href="#">Abstract</a>	<a href="#">Attachments</a>	<a href="#">Claims</a>	<a href="#">KWC</a>	<a href="#">Draw Ds</a>
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☐ 2. Document ID: US 6627603 B1

L6: Entry 2 of 25

File: USPT

Sep 30, 2003

US-PAT-NO: 6627603

DOCUMENT-IDENTIFIER: US 6627603 B1

TITLE: Method for releasing an active principle contained a multiple emulsion

DATE-ISSUED: September 30, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bibette; Jerome	Bordeaux			FR
Ficheux; Marie-Fran.cedilla.oise	Gradignan			FR
Leal Calderon; Fernando	La Brede			FR
Bonnakdar; Lida	Talence			FR

US-CL-CURRENT: [514/3](#), [424/400](#), [424/401](#), [424/94.1](#), [514/769](#), [514/772](#), [514/784](#),  
[514/785](#), [514/873](#), [514/885](#), [514/904](#), [514/913](#), [514/937](#), [514/938](#), [514/941](#), [514/942](#),  
[514/943](#), [514/969](#), [514/974](#), [514/975](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Abstracts	Claims	FIGs	Drawings
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☐ 3. Document ID: US 6528038 B1

L6: Entry 3 of 25

File: USPT

Mar 4, 2003

US-PAT-NO: 6528038

DOCUMENT-IDENTIFIER: US 6528038 B1

TITLE: Porphyromonas gingivalis antigens for the diagnosis and treatment of periodontitis

DATE-ISSUED: March 4, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Reynolds; Eric Charles	North Balwyn			AU
Slakeski; Nada	Kew			AU
Hendtlass; Anne	Balwyn			AU

US-CL-CURRENT: 424/9.2; 424/184.1, 424/190.1, 424/234.1, 514/900, 514/901, 514/902, 530/300, 530/350, 536/23.1, 536/23.7

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Abstracts	Claims	FIGs	Drawings
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☐ 4. Document ID: US 6514503 B1

L6: Entry 4 of 25

File: USPT

Feb 4, 2003

US-PAT-NO: 6514503

DOCUMENT-IDENTIFIER: US 6514503 B1

TITLE: Antigen delivery system

DATE-ISSUED: February 4, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gizurarson; Sveinbjorn	Reykjavik			IS
Gudmundsdottir; Vera	Reykjavik			IS

US-CL-CURRENT: 424/278.1; 424/184.1, 424/234.1, 514/2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Abstracts	Claims	FIGs	Drawings
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☐ 5. Document ID: US 6511666 B1

L6: Entry 5 of 25

File: USPT

Jan 28, 2003



US-PAT-NO: 6511666

DOCUMENT-IDENTIFIER: US 6511666 B1

TITLE: Diagnostics and treatments of periodontal disease

DATE-ISSUED: January 28, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Reynolds; Eric Charles	North Balwyn			AU
Bhogal; Peter Singh	Point Lonsdale			AU
Slakeski; Nada	East Kew			AU

US-CL-CURRENT: [424/184.1](#); [424/185.1](#), [424/190.1](#), [424/193.1](#), [424/197.11](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	ROME	Draw D
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☐ 6. Document ID: US 6485950 B1

L6: Entry 6 of 25

File: USPT

Nov 26, 2002

US-PAT-NO: 6485950

DOCUMENT-IDENTIFIER: US 6485950 B1

TITLE: Isozyme of autoclavable superoxide dismutase (SOD), a process for the identification and extraction of the SOD in cosmetic, food and pharmaceutical compositions

DATE-ISSUED: November 26, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kumar; Sanjay	Himachal Pradesh			IN
Sahoo; Rashmita	Himachal Pradesh			IN
Ahuja; Paramvir Singh	Himachal Pradesh			IN

US-CL-CURRENT: [435/189](#); [424/94.4](#), [435/183](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	ROME	Draw D
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☐ 7. Document ID: US 6451325 B1

L6: Entry 7 of 25

File: USPT

Sep 17, 2002

US-PAT-NO: 6451325

DOCUMENT-IDENTIFIER: US 6451325 B1

TITLE: Adjuvant formulation comprising a submicron oil droplet emulsion

DATE-ISSUED: September 17, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Van Nest; Gary	El Sorbrante	CA		
Ott; Gary	Livermore	CA		
Barchfeld; Gail	Alameda	CA		

US-CL-CURRENT: 424/283.1; 424/184.1, 424/278.1, 424/450, 514/18, 514/2, 514/21,  
514/8, 514/970, 514/975

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	FIGS	Drawings
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☐ 8. Document ID: US 6428790 B1

L6: Entry 8 of 25

File: USPT

Aug 6, 2002

US-PAT-NO: 6428790

DOCUMENT-IDENTIFIER: US 6428790 B1

TITLE: Cyanovirin conjugates and matrix-anchored cyanovirin and related  
compositions and methods of use

DATE-ISSUED: August 6, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Boyd; Michael R.	Ijamsville	MD		

US-CL-CURRENT: 424/188.1; 424/140.1, 424/178.1, 424/184.1, 424/484, 514/2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	FIGS	Drawings
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☐ 9. Document ID: US 6299884 B1

L6: Entry 9 of 25

File: USPT

Oct 9, 2001

US-PAT-NO: 6299884

DOCUMENT-IDENTIFIER: US 6299884 B1

TITLE: Adjuvant formulation comprising a submicron oil droplet emulsion

DATE-ISSUED: October 9, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Van Nest; Gary	El Sobrante	CA		
Ott; Gary	Livermore	CA		
Barchfeld; Gail	Alameda	CA		

US-CL-CURRENT: 424/283.1; 424/776

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMMC	Draw D
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☐ 10. Document ID: US 6235282 B1

L6: Entry 10 of 25

File: USPT

May 22, 2001

US-PAT-NO: 6235282

DOCUMENT-IDENTIFIER: US 6235282 B1

**\*\* See image for Certificate of Correction \*\***

TITLE: Vaccinal fluid water-in-oil emulsions containing a metabolizable oil

DATE-ISSUED: May 22, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Riviere; Michel Emile Albert	Ecully			FR
Roulet; Claude	Venissieux			FR

US-CL-CURRENT: 424/184.1; 424/1.11, 424/190.1, 424/191.1, 424/192.1, 424/193.1,  
424/199.1, 424/200.1, 424/201.1, 424/278.1, 424/283.1, 514/785

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMMC	Draw D
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☐ 11. Document ID: US 6210742 B1

L6: Entry 11 of 25

File: USPT

Apr 3, 2001

US-PAT-NO: 6210742

DOCUMENT-IDENTIFIER: US 6210742 B1

TITLE: Uses of oil bodies

DATE-ISSUED: April 3, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Deckers; Harm M	Calgary			CA
van Rooijen; Gijs	Calgary			CA
Boothe; Joseph	Calgary			CA
Goll; Janis	Calgary			CA
Mahmoud; Soheil	Calgary			CA
Moloney; Maurice M.	Calgary			CA

US-CL-CURRENT: 426/630; 426/302, 426/602, 426/615, 426/635, 426/89, 516/53

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMMC	Draw D
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☐ 12. Document ID: US 6183762 B1

L6: Entry 12 of 25

File: USPT

Feb 6, 2001

US-PAT-NO: 6183762

DOCUMENT-IDENTIFIER: US 6183762 B1

TITLE: Oil body based personal care products

DATE-ISSUED: February 6, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Deckers; Harm M.	Calgary			CA
van Rooijen; Gijs	Calgary			CA
Boothe; Joseph	Calgary			CA
Goll; Janis	Calgary			CA
Moloney; Maurice M.	Calgary			CA

US-CL-CURRENT: 424/401; 426/417, 426/601, 426/602, 426/605, 426/615, 426/629,  
426/635, 426/805, 514/937, 516/53

Full	Title	Citation	Front	Review	Classification	Date	Reference	Substantive	Attachments	Claims	Keywords	Drawings
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☐ 13. Document ID: US 6146645 A

L6: Entry 13 of 25

File: USPT

Nov 14, 2000

US-PAT-NO: 6146645

DOCUMENT-IDENTIFIER: US 6146645 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Uses of oil bodies

DATE-ISSUED: November 14, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Deckers; Harm M	Calgary			CA
van Rooijen; Gijs	Calgary			CA
Boothe; Joseph	Calgary			CA
Goll; Janis	Calgary			CA
Mahmoud; Soheil	Calgary			CA
Moloney; Maurice M.	Calgary			CA

US-CL-CURRENT: 424/401; 426/417, 426/601, 426/602, 426/605, 426/615, 426/629,  
426/635, 426/805, 514/937, 516/53

Full	Title	Citation	Front	Review	Classification	Date	Reference	Substantive	Attachments	Claims	Keywords	Drawings
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☐ 14. Document ID: US 6083520 A

L6: Entry 14 of 25

File: USPT

Jul 4, 2000

US-PAT-NO: 6083520

DOCUMENT-IDENTIFIER: US 6083520 A

TITLE: Bioactive feed

DATE-ISSUED: July 4, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Toneby; Mark	Dalvagen			SE

US-CL-CURRENT: [424/420](#); [424/184.1](#), [424/442](#), [424/498](#), [426/72](#), [438/442](#), [438/498](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWMC	Drawings
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☐ 15. Document ID: US 6022547 A

L6: Entry 15 of 25

File: USPT

Feb 8, 2000

US-PAT-NO: 6022547

DOCUMENT-IDENTIFIER: US 6022547 A

TITLE: Rinse-off water-in-oil-in-water compositions

DATE-ISSUED: February 8, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Herb; Craig A.	Chicago	IL		
Chen; Liang Bin	Lombard	IL		
Chung; Judy	Glenview	IL		
Long; Michelle A.	Lombard	IL		
Sun; Wei Mei	Palatine	IL		
Newell; Gerald P.	Hoffman Estates	IL		
Evans; Trefor A.	Lombard	IL		
Kamis; Kimberly	Glenview	IL		
Brucks; Richard M.	Chicago	IL		

US-CL-CURRENT: [424/401](#); [424/70.28](#), [510/119](#), [510/130](#), [514/937](#), [514/941](#), [514/975](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWMC	Drawings
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☐ 16. Document ID: US 6013255 A

L6: Entry 16 of 25

File: USPT

Jan 11, 2000

US-PAT-NO: 6013255  
DOCUMENT-IDENTIFIER: US 6013255 A

TITLE: Stable water-in-oil emulsions

DATE-ISSUED: January 11, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Edens; Luppo	Rotterdam			NL
Meijer; Dirk	Breda			NL
Van Paridon; Petrus Andreas	Voorburg			NL

US-CL-CURRENT: 424/94.1; 424/439, 426/601, 426/602

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	Image	Draw Data
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☐ 17. Document ID: US 5709879 A

L6: Entry 17 of 25

File: USPT

Jan 20, 1998

US-PAT-NO: 5709879  
DOCUMENT-IDENTIFIER: US 5709879 A

TITLE: Vaccine compositions containing liposomes

DATE-ISSUED: January 20, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Barchfeld; Gail L.	Hayward	CA		
Ott; Gary	Oakland	CA		
Van Nest; Gary A.	El Sobrante	CA		

US-CL-CURRENT: 424/450; 424/184.1, 424/204.1, 424/234.1, 424/812, 514/2, 514/937,  
514/938

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachments	Claims	Image	Draw Data
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☐ 18. Document ID: US 5688761 A

L6: Entry 18 of 25

File: USPT

Nov 18, 1997

US-PAT-NO: 5688761  
DOCUMENT-IDENTIFIER: US 5688761 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Convertible microemulsion formulations

DATE-ISSUED: November 18, 1997

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Owen; Albert J.	West Chester	PA		
Yiv; Seang H.	Wilmington	DE		
Sarkahian; Ani B.	Bryn Mawr	PA		

US-CL-CURRENT: 514/2; 424/193.1, 424/400, 424/94.3, 514/12, 514/13

Full	Title	Citation	Front	Review	Classification	Date	Reference	Searches	Attachments	Claims	KMNC	Draw De
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☐ 19. Document ID: US 5646109 A

L6: Entry 19 of 25

File: USPT

Jul 8, 1997

US-PAT-NO: 5646109

DOCUMENT-IDENTIFIER: US 5646109 A

TITLE: Convertible microemulsion formulations

DATE-ISSUED: July 8, 1997

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Owen; Albert J.	West Chester	PA		
Yiv; Seang H.	Wilmington	DE		

US-CL-CURRENT: 514/2; 424/400, 514/12, 514/937

Full	Title	Citation	Front	Review	Classification	Date	Reference	Searches	Attachments	Claims	KMNC	Draw De
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☐ 20. Document ID: US 5633226 A

L6: Entry 20 of 25

File: USPT

May 27, 1997

US-PAT-NO: 5633226

DOCUMENT-IDENTIFIER: US 5633226 A

TITLE: Convertible microemulsion formulations

DATE-ISSUED: May 27, 1997

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Owen; Albert J.	West Chester	PA		
Yiv; Seang H.	Wilmington	DE		

US-CL-CURRENT: 514/2; 424/193.1, 424/400, 514/784, 514/937

Full	Title	Citation	Front	Review	Classification	Date	Reference	Searches	Attachments	Claims	KMNC	Draw De
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☐ 21. Document ID: US 5589177 A

L6: Entry 21 of 25

File: USPT

Dec 31, 1996

US-PAT-NO: 5589177

DOCUMENT-IDENTIFIER: US 5589177 A

TITLE: Rinse-off water-in-oil-in-water compositions

DATE-ISSUED: December 31, 1996

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Herb; Craig A.	Chicago	IL		
Chen; Liang B.	Hoffman Estates	IL		
Chung; Judy B.	Glenview	IL		
Long; Michelle A.	Lombard	IL		
Sun; Wei M.	Palatine	IL		
Newell; Gerald P.	Hoffman Estates	IL		
Kamis; Kimberly	Glenview	IL		
Brucks; Richard M.	Chicago	IL		

US-CL-CURRENT: 424/401; 424/70.1, 510/122, 514/937

Full	Title	Citation	Front	Review	Classification	Date	Reference	Search	Abstract	Claims	RMK	Draw De
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☐ 22. Document ID: US 5531925 A

L6: Entry 22 of 25

File: USPT

Jul 2, 1996

US-PAT-NO: 5531925

DOCUMENT-IDENTIFIER: US 5531925 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Particles, method of preparing said particles and uses thereof

DATE-ISSUED: July 2, 1996

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Landh; Tomas	Lund			SE
Larsson; Kare	Bjarred			SE

US-CL-CURRENT: 252/299.01; 424/1.21, 424/450, 424/455, 428/402, 435/4, 514/2,  
514/937, 514/964, 516/56, 516/70, 516/76, 516/900

Full	Title	Citation	Front	Review	Classification	Date	Reference	Search	Abstract	Claims	RMK	Draw De
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☐ 23. Document ID: US 5444041 A

L6: Entry 23 of 25

File: USPT

Aug 22, 1995

US-PAT-NO: 5444041

DOCUMENT-IDENTIFIER: US 5444041 A

TITLE: Convertible microemulsion formulations

DATE-ISSUED: August 22, 1995

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Owen; Albert J.	West Chester	PA		
Yiv; Seang H.	Wilmington	DE		
Sarkahian; Ani B.	Bryn Mawr	PA		

US-CL-CURRENT: 514/2; 424/193.1, 424/400, 424/94.3

Full	Title	Citation	Front	Review	Classification	Date	Reference	Source	Abstract	Claims	RMK	Draw D
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☐ 24. Document ID: US 5084269 A

L6: Entry 24 of 25

File: USPT

Jan 28, 1992

US-PAT-NO: 5084269

DOCUMENT-IDENTIFIER: US 5084269 A

TITLE: Adjuvant for dose treatment with antigens

DATE-ISSUED: January 28, 1992

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kullenberg; Fred W.	Valley	NE	68064	

US-CL-CURRENT: 424/256.1; 424/204.1, 424/234.1, 424/283.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Source	Abstract	Claims	RMK	Draw D
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☐ 25. Document ID: US 4284719 A

L6: Entry 25 of 25

File: USPT

Aug 18, 1981

US-PAT-NO: 4284719

DOCUMENT-IDENTIFIER: US 4284719 A

TITLE: Substrate composition and use thereof

DATE-ISSUED: August 18, 1981

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Agerhem; Halina	Malmo			SE
Nilsson; Hans J.	Lund			SE

US-CL-CURRENT: 435/18; 435/287.6, 435/4, 436/169, 436/2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Figures	Claims	KIMC	Draw D
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Terms	Documents
L5 and monoglyceride	25

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L6: Entry 9 of 25

File: USPT

Oct 9, 2001

DOCUMENT-IDENTIFIER: US 6299884 B1

TITLE: Adjuvant formulation comprising a submicron oil droplet emulsion

Brief Summary Text (3):

This invention relates generally to immunological adjuvants for use in increasing efficiency of vaccines and is particularly directed to adjuvants comprising oil-in-water emulsions.

Brief Summary Text (7):

Complete Freund's adjuvant (CFA) is a powerful immunostimulatory agent that has been used successfully with many antigens on an experimental basis. CFA is comprised of three components: a mineral oil, an emulsifying agent such as Arlacel A, and killed mycobacteria such as *Mycobacterium tuberculosis*. Aqueous antigen solutions are mixed with these components to create a water-in-oil emulsion. CFA causes severe side effects, however, including pain, abscess formation, and fever, which prevent its use in either human or veterinary vaccines. The side effects are primarily due to the host's reactions to the mycobacterial component of CFA. Incomplete Freund's adjuvant (IFA) is similar to CFA without the bacterial component. While not approved for use in the United States, IFA has been useful for several types of vaccines in other countries. IFA has been used successfully in humans with influenza and polio vaccines and with several animal vaccines including rabies, canine distemper, and foot-and-mouth disease. Experiments have shown that both the oil and emulsifier used in IFA can cause tumors in mice, indicating that an alternative adjuvant would be a better choice for human use.

Brief Summary Text (10):

Original mouse experiments in the laboratories of the present inventors with MTP-PE showed that this adjuvant was effective in stimulating anti-HSV gD antibody titers against herpes simplex virus gD anti-gen and that effectiveness was vastly improved if the MTP-PE and gD were delivered in oil (IFA) rather than in aqueous solution. Since IFA is not approved for human use, other oil delivery systems were investigated for MTP-PE and antigen. An emulsion of 4% squalene with 0.008% Tween 80 and HSV gD gave very good immunity in the guinea pig. This formulation, MTP-PE-LO (low oil), was emulsified by passing through a hypodermic needle and was quite unstable. Nevertheless, this formulation gave high antibody titers in the guinea pig and good protection in a HSV challenge of immunized guinea pigs. The formulation was most effective when delivered in the footpad but also gave reasonable antibody titers and protection when delivered intramuscularly. These data have appeared in 2 publications (Sanchez-Pescador et al., J. Immunology 141, 1720-1727, 1988 and Technological Advances in Vaccine Development, Lasky et al., ed., Alan R. Liss, Inc., p. 445-469, 1988). The MTP-PE-LO formulation was also effective in stimulating the immune response to the yeast-produced HIV envelope protein in guinea pigs. Both ELISA antibody titers and virus neutralizing antibody titers were stimulated to a high level with the MTP-PE formulation. However, when the same formulation was tested in large animals, such as goats and baboons, the compositions were not as effective. The desirability of additional adjuvant formulations for use with molecular antigens in humans and other large animals is evident.

Brief Summary Text (29):

However, when the adjuvant is initially prepared, unadulterated water is preferred as the aqueous component of the emulsion. Increasing the salt concentration makes it more difficult to achieve the desired small droplet size. When the final vaccine formulation is prepared from the adjuvant, the antigenic material can be added in a buffer at an appropriate osmolality to provide the desired vaccine composition.

Brief Summary Text (34):

2. Anionic synthetic non-soap detergents, which can be represented by the water-soluble salts of organic sulfuric acid reaction products having in their molecular structure an alkyl radical containing from about 8 to 22 carbon atoms and a radical selected from the group consisting of sulfonic acid and sulfuric acid ester radicals. Examples of these are the sodium or potassium alkyl sulfates, derived from tallow or coconut oil; sodium or potassium alkyl benzene sulfonates; sodium alkyl glyceryl ether sulfonates; sodium coconut oil fatty acid monoglyceride sulfonates and sulfates; sodium or potassium salts of sulfuric acid esters of the reaction product of one mole of a higher fatty alcohol and about 1 to 6 moles of ethylene oxide; sodium or potassium alkyl phenol ethylene oxide ether sulfonates, with 1 to 10 units of ethylene oxide per molecule and in which the alkyl radicals contain from 8 to 12 carbon atoms; the reaction product of fatty acids esterified with isethionic acid and neutralized with sodium hydroxide; sodium or potassium salts of fatty acid amide of a methyl tauride; and sodium and potassium salts of SO.sub.3 -sulfonated C.sub.10 -C.sub.24 .alpha.-olefins.

Brief Summary Text (40):

Additionally, all of the following types of emulsifying agents can be used in a composition of the present invention: (a) soaps (i.e., alkali salts) of fatty acids, rosin acids, and tall oil; (b) alkyl arene sulfonates; (c) alkyl sulfates, including surfactants with both branched-chain and straight-chain hydrophobic groups, as well as primary and secondary sulfate groups; (d) sulfates and sulfonates containing an intermediate linkage between the hydrophobic and hydrophilic groups, such as the fatty acylated methyl taurides and the sulfated fatty monoglycerides; (e) long-chain acid esters of polyethylene glycol, especially the tall oil esters; (f) polyethylene glycol ethers of alkylphenols; (g) polyethylene glycol ethers of long-chain alcohols and mercaptans; and (h) fatty acyl diethanol amides. Since surfactants can be classified in more than one manner, a number of classes of surfactants set forth in this paragraph overlap with previously described surfactant classes.

Brief Summary Text (50):

As the adjuvant and the vaccine formulations of this invention are intended to be multi-phase systems, it is preferable to choose an emulsion-forming non-ionic surfactant which has an HLB value in the range of about 7 to 16. This value may be obtained through the use of a single non-ionic surfactant such as a TWEEN.RTM. surfactant or may be achieved by the use of a blend of surfactants such as with a sorbitan mono, di- or triester based surfactant; a sorbitan ester polyoxyethylene fatty acid; a sorbitan ester in combination with a polyoxyethylene lanolin derived surfactant; a sorbitan ester surfactant in combination with a high HLB polyoxyethylene fatty ether surfactant; or a polyethylene fatty ether surfactant or polyoxyethylene sorbitan fatty acid.

Brief Summary Text (98):

Since the adjuvant compositions of the invention are stable, the antigen and emulsion can be mixed by simple shaking. Other techniques, such as passing a mixture of the adjuvant and solution or suspension of the antigen rapidly through a small opening (such as a hypodermic needle) readily provides a useful vaccine composition.

Detailed Description Text (36):

As demonstrated in Example 2, MTP-PE-LO formulations that were prepared with a syringe and needle (.about.10 micron droplet size) and the Kirkland emulsifier (1-2

micron droplet size) failed to give good immunostimulation to vaccine antigens in large animals and humans (human data not shown). The microfluidizer model 110Y was used to generate small-droplet-size, stable emulsions. This machine is a high pressure (5000-30,000 PSI) submerged jet type emulsifier. A series of emulsions were prepared varying in size and stability based on the concentrations of squalene, Tween 80, and MTP-PE and the physical parameters of temperature and operating pressure. Examples of different emulsions made with the microfluidizer are given in Table 8. By changing the physical parameters and emulsion composition, oil droplet sizes from 1 micron to less than 0.2 microns can be achieved. As demonstrated in Table 8, parameters that decrease emulsion droplet size are increased detergent, increased MTP-PE to squalene ratio, increased operating pressure, and increased operating temperature. These small droplet size emulsions were then tested as adjuvants for vaccine antigens in goats and baboons.

Detailed Description Text (57):

In a series of experiments, hamsters were immunized with a commercial influenza vaccine from Instituto Vaccinogeno Pozzi. This vaccine consists of purified HA from two A strains (A/Leningrad/360/86 and A/Singapore/6/86) and one B strain (B/Ann Arbor/1/86). The vaccine was tested alone, with an MTP-PE/LO emulsion made with a Kirkland emulsifier (Fluoromed Pharmaceutical, Inc., La Mesa, Calif.) and with an MTP-PE/MF emulsion made in a microfluidizer (model 110Y, Microfluidics, Newton, Mass.). The first two are comparative compositions, while the "MF" composition is a composition of the invention. MTP-PE/MF stands for "MTP-PE Microfluidizer" emulsion and contains 4% squalene and 1.0 mg/ml MTP-PE emulsified with the Microfluidizer. The MTP-PE Kirkland emulsion contained 4% squalene, 0.5 mg/ml MTP-PE, and 0.008% Tween 80 emulsified with the Kirkland emulsifier. Animals received three immunizations containing 8.3 .mu.g of each HA antigen. MTP-PE was used at 50 .mu.g per dose in both formulations. ELISA titers were determined against the immunizing antigens after each immunization and HAI titers were determined after the second immunization. ELISA titers were increased substantially by both of the adjuvant formulations tested.

Detailed Description Text (59):

In further experiments, the immunogenicity of two commercial influenza vaccines, Parke-Davis Fluogen and Duphar subunit influenza, were compared with no adjuvant and with several MTP-PE containing adjuvant formulations in goats. The animals were immunized intramuscularly with 0.5 ml of each vaccine mixed with either 0.5 ml of PBS or 0.5 ml of MTP-PE adjuvant formulations. Three adjuvant formulations were compared: 200 pg of MTP-PE dissolved in PBS, and 200 .mu.g of MTP-PE in two different microfluidized emulsions, referred to as Gaulin 1/4 and MF40/4 emulsions. Gaulin 1/4 consists of 1.6% squalene and 400 .mu.g/ml MTP-PE emulsified in the Gaulin homogenizer (APV Gaulin, Everett, MA). MTP-PE/MF-40/4 consists of 1.6% squalene, 400 .mu.g/ml MTP-PE, 0.154% Tween 85, and 0.166% Span 85 emulsified in the Microfluidizer (Model 110Y, Microfluidics, Newton, Mass.). Animals received 0.5 ml of vaccine mixed with either 0.5 ml of PBS or 0.5 ml of the indicated adjuvant formulation to generate a 1.0 ml injection volume. As with the hamsters, the goats receiving the influenza vaccines combined with the adjuvant emulsions showed much higher antibody titers than goats receiving vaccine alone. This is especially pronounced early in the immunization schedule. After one immunization the Gaulin 1/4 emulsion generated anti-HA titers greater than 30-fold higher than the Parke-Davis vaccine alone. The MTP-PE/MF-40 emulsion generated anti-HA titers that were greater than 130-fold higher than Parke-Davis vaccine alone and 60-fold higher than Duphar vaccine alone. MTP-PE in PBS showed no stimulation of antibody titer after one immunization. After two immunizations, similar increases in antibody titers with the emulsions were seen. The early stimulation of anti-HA titers seen with the adjuvant emulsions is especially significant since influenza vaccines are generally given as one dose vaccines to adults and two dose vaccines to infants. Thus, as in hamsters, the MTP-PE-emulsions show large increases in the immune response to influenza vaccines.

Other Reference Publication (8):

Woodard et al., "Stable Oil-in-Water Emulsions: Preparation and Use as Vaccine Vehicles for Lipophilic Adjuvants," Vaccine 3:137-144 (1985).

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L9: Entry 11 of 15

File: USPT

Feb 14, 1978

US-PAT-NO: 4073743

DOCUMENT-IDENTIFIER: US 4073743 A

TITLE: Process for preparing an emulsion

DATE-ISSUED: February 14, 1978

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Midler, Jr.; Michael	East Brunswick	NJ		
Paul; Edward	Chatam Township, Union County	NJ		

US-CL-CURRENT: [424/209.1](#); [424/283.1](#), [514/784](#), [514/943](#), [516/27](#), [516/29](#)

## CLAIMS:

What is claimed is:

1. The method of preparing a water-in-oil emulsion, wherein the oil phase contains isomannide monooleate and a non-hydrated physiologically acceptable fatty acid metal salt, which comprises:

mixing the aqueous and oil phases at about 9.degree. to about 35.degree. C. at a relatively low agitator speed such that the value of the term  $N \cdot \sup{.3} D \cdot \sup{.5} / V$  remains below about  $80 \cdot \sup{.9} 10$  wherein  $N$  = rpm,  $D$  = agitator diameter (inches),  $V$  = emulsion volume (liters); and

increasing the agitator speed such that the value of the term  $N \cdot \sup{.3} D \cdot \sup{.5} / V$  wherein  $N$ ,  $D$ , and  $V$  are as defined above, is above about  $140 \cdot \sup{.9} 10$  to form a stable emulsion.

2. The method of claim 1 additionally including the step of cooling the aqueous and oil phases that have been mixed at relatively low agitator speed to from about 9.degree. to about 12.degree. C.

3. The method of claim 1 additionally including the step of homogenizing the stable emulsion.

4. The method of claim 1 wherein the mixing takes place at from about 9.degree. to about 25.degree. C.

5. The method of claim 2 wherein the mixing takes place at from about 15.degree. to about 17.degree. C.

6. The method of claim 2 additionally including the step of homogenizing the stable emulsion.

7. The method of claim 2 wherein the cooling is to about 10.degree. to about 11.degree. C.
8. The method of claim 3 wherein the homogenizing is carried out in a colloid mill.
9. The method of claim 8 wherein the homogenizing is carried out in a colloid mill having about 7 to about 17 mil rotor/stator gap width, operating at about 1500 to about 1800 rpm at the rate of about 3.0 to about 4.5 liters/minute flow rate.
10. The method of claim 1 wherein the water-in-oil emulsion is a vehicle for an immunological substance.
11. The method of claim 1 wherein an antigen is incorporated in the aqueous phase prior to the addition of the aqueous phase to the oil.
12. The method of claim 11 wherein the antigen is influenza vaccine.

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L9: Entry 13 of 15

File: EPAB

Jun 15, 1995

DOCUMENT-IDENTIFIER: WO 9515768 A1

TITLE: ADJUVANT FOR ANTIGENS, PROCESS FOR PRODUCING THE SAME AND ITS USE

Abstract Text (1):

Adjuvants are disclosed for antigens such as viruses, bacteria and parasites, including their metabolic products or parts of the virus, bacteria and parasite structures for the immunization, as well as a process for producing such adjuvants and their uses. The object of the invention is to create adjuvants that in combination with vaccine antigens or with peptidoglycans in histocompatible composition allow the defence mechanisms in the body to be stimulated to such a large extent that for the first time besides active immunoprophylaxis a even of weak antigens also a general and specific immunotherapy is made possible. The cost of producing the adjuvant should not exceed the usual cost and should ensure the applicability of the vaccine. In relatively weak immuno-incompetent phases of life, a combination of general immunoprophylaxis or the only use of the adjuvant should ensure a high immuno-competence. Residual effects of the adjuvant should not cause any problems. The disclosed adjuvants are oil-in-water emulsions. The oil phase consists of polydimethyl siloxanes and the aqueous phase substantially consists of a biocompatible salt solution. The oil phase is stabilised in the water phase by means of a complex emulsifying agent with HLB value from 9 to 16. The complex emulsifying agent is a combination of aliphatic alcohols of sorbitol with 10 to 100 carbon atoms in the chain and/or of glycerol fatty acid esters and polysorbates. The biocompatible salt solution is a phosphate-buffered sodium chloride solution with EDTA sodium. The combination further contains dimethylsulfoxide. A complete adjuvant is produced by adding peptidoglycans based on species-specific St. Aureus strains and water-soluble natural and/or synthetic polymers.

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L9: Entry 15 of 15

File: DWPI

Jul 9, 1995

DERWENT-ACC-NO: 1996-127269  
DERWENT-WEEK: 199613  
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TITLE: Adjuvant for foot-and-mouth vaccines - contg. oil base and emulsifier,  
comprising poly-glycerine alkanoate mixt. based on unsaturated fatty acids.

INVENTOR: MAMKOV, N S; MIKHALISHIN, V V ; SHIPILOV, V I

PRIORITY-DATA: 1989SU-4764638 (November 30, 1989)

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## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<input type="checkbox"/> <a href="#">RU 1692022 C</a>	July 9, 1995		005	A61K039/135

INT-CL (IPC): [A61 K 31/23](#); [A61 K 35/06](#); [A61 K 39/135](#)

ABSTRACTED-PUB-NO: RU 1692022C  
BASIC-ABSTRACT:

An adjuvant with enhanced immunostimulating activity consists of (wt.%): emulsifier comprising a polyglycerine-alkanoate mixt. based on unsaturated fatty acids (10-15); and oil base (85-90%).

USE - In veterinary virology, and in the development and prodn. of water-in-oil emulsion adjuvants and vaccines based on them.

ADVANTAGE - Immunostimulating activity is enhanced and viscosity and solidification pt. of vaccines lowered.

ABSTRACTED-PUB-NO: RU 1692022C  
EQUIVALENT-ABSTRACTS:

CHOSEN-DRAWING: Dwg.0/0

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☐ 1. Document ID: US 6706859 B1

Using default format because multiple data bases are involved.

L9: Entry 1 of 15

File: USPT

Mar 16, 2004

US-PAT-NO: 6706859

DOCUMENT-IDENTIFIER: US 6706859 B1

TITLE: HIV peptides, antigens, vaccine compositions, immunoassay kit and a method of detecting antibodies induced by HIV

DATE-ISSUED: March 16, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sorensen; Birger	Skien			NO

US-CL-CURRENT: [530/326](#); [435/5](#), [435/7.1](#), [530/324](#), [530/325](#), [530/327](#), [530/328](#)

<a href="#">Full</a>	<a href="#">Title</a>	<a href="#">Citation</a>	<a href="#">Front</a>	<a href="#">Review</a>	<a href="#">Classification</a>	<a href="#">Date</a>	<a href="#">Reference</a>	<a href="#">Sequence</a>	<a href="#">Attachment</a>	<a href="#">Claims</a>	<a href="#">KIMC</a>	<a href="#">Draw D</a>
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☐ 2. Document ID: US 6451325 B1

L9: Entry 2 of 15

File: USPT

Sep 17, 2002

US-PAT-NO: 6451325

DOCUMENT-IDENTIFIER: US 6451325 B1

TITLE: Adjuvant formulation comprising a submicron oil droplet emulsion

DATE-ISSUED: September 17, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Van Nest; Gary	El Sorbrante	CA		
Ott; Gary	Livermore	CA		
Barchfeld; Gail	Alameda	CA		

US-CL-CURRENT: [424/283.1](#); [424/184.1](#), [424/278.1](#), [424/450](#), [514/18](#), [514/2](#), [514/21](#), [514/8](#), [514/970](#), [514/975](#)

<a href="#">Full</a>	<a href="#">Title</a>	<a href="#">Citation</a>	<a href="#">Front</a>	<a href="#">Review</a>	<a href="#">Classification</a>	<a href="#">Date</a>	<a href="#">Reference</a>	<a href="#">Sequence</a>	<a href="#">Attachment</a>	<a href="#">Claims</a>	<a href="#">KIMC</a>	<a href="#">Draw D</a>
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☐ 3. Document ID: US 6299884 B1

L9: Entry 3 of 15

File: USPT

Oct 9, 2001

US-PAT-NO: 6299884

DOCUMENT-IDENTIFIER: US 6299884 B1

TITLE: Adjuvant formulation comprising a submicron oil droplet emulsion

DATE-ISSUED: October 9, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Van Nest; Gary	El Sobrante	CA		
Ott; Gary	Livermore	CA		
Barchfeld; Gail	Alameda	CA		

US-CL-CURRENT: 424/283.1; 424/776

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 4. Document ID: US 5904925 A

L9: Entry 4 of 15

File: USPT

May 18, 1999

US-PAT-NO: 5904925

DOCUMENT-IDENTIFIER: US 5904925 A

TITLE: Adjuvant for antigens, and process for making

DATE-ISSUED: May 18, 1999

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Exner; Heinrich	39291 Mockern			DE

US-CL-CURRENT: 424/282.1; 424/201.1, 424/243.1, 424/278.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 5. Document ID: US 5814321 A

L9: Entry 5 of 15

File: USPT

Sep 29, 1998

US-PAT-NO: 5814321

DOCUMENT-IDENTIFIER: US 5814321 A

TITLE: Oil adjuvant vaccine and method for preparing same

DATE-ISSUED: September 29, 1998

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Miyahara; Tokuji	Kumamoto-ken			JP
Takase; Kozo	Kumamoto-ken			JP
Saito; Koichi	Amagasaki			JP
Kishimoto; Yoko	Akashi			JP
Tokuyama; Satoru	Nishinomiya			JP

US-CL-CURRENT: 424/278.1; 424/283.1, 514/937, 514/938, 514/939, 514/943

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Abstracts	Claims	KWIC	Drawings
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☐ 6. Document ID: US 5709879 A

L9: Entry 6 of 15

File: USPT

Jan 20, 1998

US-PAT-NO: 5709879

DOCUMENT-IDENTIFIER: US 5709879 A

TITLE: Vaccine compositions containing liposomes

DATE-ISSUED: January 20, 1998

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Barchfeld; Gail L.	Hayward	CA		
Ott; Gary	Oakland	CA		
Van Nest; Gary A.	El Sobrante	CA		

US-CL-CURRENT: 424/450; 424/184.1, 424/204.1, 424/234.1, 424/812, 514/2, 514/937, 514/938

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Abstracts	Claims	KWIC	Drawings
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☐ 7. Document ID: US 4933179 A

L9: Entry 7 of 15

File: USPT

Jun 12, 1990

US-PAT-NO: 4933179

DOCUMENT-IDENTIFIER: US 4933179 A

TITLE: Feline leukemia virus antigen vaccines

DATE-ISSUED: June 12, 1990

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Allison; Anthony C.	Belmont	CA		

Byars; Noelene E. Sunnyvale CA

US-CL-CURRENT: 424/207.1; 424/278.1, 424/279.1, 424/280.1, 424/819, 435/235.1,  
435/236, 435/237, 435/238, 435/239, 435/948, 514/2, 514/21, 514/723, 514/8,  
514/908, 514/941, 514/975, 516/59, 516/DIG.1, 516/DIG.2, 530/322 , 530/350,  
530/395, 530/806

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachment	Claims	RMIC	Draw D
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☐ 8. Document ID: US 4772466 A

L9: Entry 8 of 15

File: USPT

Sep 20, 1988

US-PAT-NO: 4772466

DOCUMENT-IDENTIFIER: US 4772466 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Vaccines comprising polyoxypropylene-polyoxyethylene block polymer based adjuvants

DATE-ISSUED: September 20, 1988

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Allison; Anthony C.	Belmont	CA		
Byars; Noelene E.	Sunnyvale	CA		

US-CL-CURRENT: 424/209.1; 424/207.1, 424/279.1, 424/280.1, 424/283.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Attachment	Claims	RMIC	Draw D
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☐ 9. Document ID: US 4770874 A

L9: Entry 9 of 15

File: USPT

Sep 13, 1988

US-PAT-NO: 4770874

DOCUMENT-IDENTIFIER: US 4770874 A

TITLE: Polyoxypropylene-polyoxyethylene block polymer based adjuvants

DATE-ISSUED: September 13, 1988

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Allison; Anthony C.	Belmont	CA		
Byars; Noelene E.	Sunnyvale	CA		

US-CL-CURRENT: 424/278.1; 424/279.1, 424/280.1, 436/543, 514/8, 514/885, 516/72,  
516/DIG.1, 516/DIG.2, 530/322, 530/806 , 530/815

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KUMC	Draw D
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☐ 10. Document ID: US 4606918 A

L9: Entry 10 of 15

File: USPT

Aug 19, 1986

US-PAT-NO: 4606918

DOCUMENT-IDENTIFIER: US 4606918 A

TITLE: Polyoxypropylene-polyoxyethylene block polymer based adjuvants

DATE-ISSUED: August 19, 1986

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Allison; Anthony C.	Belmont	CA		
Byars; Noelene E.	Sunnyvale	CA		

US-CL-CURRENT: 424/279.1; 424/280.1, 424/283.1, 514/723, 514/8, 516/76, 516/DIG.1,  
516/DIG.2, 530/322, 530/806, 530/815 , 536/120

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KUMC	Draw D
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☐ 11. Document ID: US 4073743 A

L9: Entry 11 of 15

File: USPT

Feb 14, 1978

US-PAT-NO: 4073743

DOCUMENT-IDENTIFIER: US 4073743 A

TITLE: Process for preparing an emulsion

DATE-ISSUED: February 14, 1978

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Midler, Jr.; Michael	East Brunswick	NJ		
Paul; Edward	Chatam Township, Union County	NJ		

US-CL-CURRENT: 424/209.1; 424/283.1, 514/784, 514/943, 516/27, 516/29

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KUMC	Draw D
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☐ 12. Document ID: JP 11269093 A

L9: Entry 12 of 15

File: JPAB

Oct 5, 1999

PUB-NO: JP411269093A

DOCUMENT-IDENTIFIER: JP 11269093 A  
TITLE: OILY ADJUVANT VACCINE PREPARATION

PUBN-DATE: October 5, 1999

## INVENTOR-INFORMATION:

NAME

COUNTRY

IWAKURA, TADAYUKI

FUKANOI, SHINICHI

TSUJI, HIROKI

INT-CL (IPC): A61 K 39/39; A61 K 9/107; A61 K 31/00; A61 K 47/14

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	FIGS	Draw D
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☐ 13. Document ID: WO 9515768 A1

L9: Entry 13 of 15

File: EPAB

Jun 15, 1995

PUB-NO: WO009515768A1

DOCUMENT-IDENTIFIER: WO 9515768 A1

TITLE: ADJUVANT FOR ANTIGENS, PROCESS FOR PRODUCING THE SAME AND ITS USE

PUBN-DATE: June 15, 1995

## INVENTOR-INFORMATION:

NAME

COUNTRY

EXNER, HEINRICH

DE

INT-CL (IPC): A61 K 39/39

EUR-CL (EPC): A61K039/39

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	FIGS	Draw D
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☐ 14. Document ID: JP 2001151699 A

L9: Entry 14 of 15

File: DWPI

Jun 5, 2001

DERWENT-ACC-NO: 2001-574315

DERWENT-WEEK: 200165

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TITLE: Oil adjuvant for animal vaccine comprises water-in-oil emulsion with oil phase component comprising animal and/or vegetable oil and immunostimulant polyalcohol fatty acid esters of sugar or sugar alcohol

PRIORITY-DATA: 1999JP-0337421 (November 29, 1999)

## PATENT-FAMILY:

PUB-NO

PUB-DATE

LANGUAGE

PAGES

MAIN-IPC

JP 2001151699 A

June 5, 2001

012

A61K039/39



INT-CL (IPC): [A61 K 39/02](#); [A61 K 39/245](#); [A61 K 39/39](#); [A61 P 31/04](#); [A61 P 31/12](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Screening	Attachments	Claims	KIMC	Draw D
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☐ 15. Document ID: RU 1692022 C

L9: Entry 15 of 15

File: DWPI

Jul 9, 1995

DERWENT-ACC-NO: 1996-127269

DERWENT-WEEK: 199613

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TITLE: Adjuvant for foot-and-mouth vaccines - contg. oil base and emulsifier, comprising poly-glycerine alkanoate mixt. based on unsaturated fatty acids.

INVENTOR: MAMKOV, N S; MIKHALISHIN, V V ; SHIPILOV, V I

PRIORITY-DATA: 1989SU-4764638 (November 30, 1989)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<a href="#">RU 1692022 C</a>	July 9, 1995		005	A61K039/135

INT-CL (IPC): [A61 K 31/23](#); [A61 K 35/06](#); [A61 K 39/135](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Screening	Attachments	Claims	KIMC	Draw D
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Clear	Generate Collection	Print	Fwd Refs	Bkwd Refs	Generate OACS
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Terms	Documents
(emulsion) same (adjuvant adj3 vaccine) same (fatty adj1 acid)	15

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